Weber, K., Juckenack, C. (1990) *The structure of the Spessart Mtns. crystalline basement and its position in the frame of the Mid-European Variscides.* In: *Mid-German Crystalline Rise & Rheinisches Schiefergebirge.* Field trip guide to IGCP 233 Conference on Paleozoic orogens in Central Europe - Geology and Geophysics. Göttingen-Giessen 1990, 101-114

Winter, W. (1992) *Experimentelle Bestimmung der Zugfestigkeit spröder Werkstoffe (Glas, Keramik) im Scheiben-Druck-Versuch.* Diss RWTH Aachen 1992.

Patent claims:

1. A procedure for the determination of deformations of a body by which the effect of forces on the body is analyzed, characterized by the determination of the way an equilibrium of forces between internal and external forces for a whole body or a part of it dependent on the material properties and the external boundary conditions comes about, whereby the deformations are determined such that all acting forces are represented by the formula

$$\mathbf{f}_{ext} + \mathbf{m}_{syst} + \mathbf{m}_A + \mathbf{f}_{s(ext)} + \mathbf{m}_{s(syst)} = 0.$$

2. Procedure according to claim 1, characterized by the condition that the material properties are determined as a function of a location Q.

3. Procedure according to one of both of the claims 1 or 2, characterized by the condition that force vector fields are calculated as a function of externally controlled boundary conditions.

4. Procedure according to one or more of the above claims, characterized by the condition that the partitioning of work done by normal and shear components of a vector or a vector field is given by the formula

$$\mathbf{r}*\mathbf{f} = \sqrt{|\mathbf{r}\times\mathbf{f}|^2 + |\mathbf{r}\cdot\mathbf{f}|^2} = |\mathbf{r}||\mathbf{f}| = const\,.$$

5. Procedure according to one or more of the above claims, characterized by the condition that a mechanical effect of the radius of a thermodynamic system within a solid is considered.

6. Procedure according to one or more of the above claims, characterized by the condition that the radius of a thermodynamic system of fluid can be considered a lever within a time span which is short relative to the diffusion rate.

7. Procedure according to one or more of the above claims, characterized by the condition that the normal stretch caused by the shear components $f_{s(ext)}$ und $m_{s(syst)}$ is essentially calculated according to the formula

$$\int(\mathbf{f}_{dev} \cdot \mathbf{t})\mathbf{r}\, d\theta = 2\int_0^{\alpha} \sin\theta\cos\theta\sqrt{\cos^2\theta + \sin^2\theta}\; d\theta\,.$$

8. Procedure according to one or more of the above claims, characterized by the condition that the total displacement is calculated through a logarithmic work equation, especially the formula

$$\int f dr = -c\int\frac{dr}{r} = -c\ln r\,.$$

9. Procedure according to one or more of the above claims, characterized by the condition that the total displacement is calculated by means of a work equation which is derived from an equation of state.

10. Computer, characterized by the condition that it comprises at least one means of calculation which uses a method for the determination of deformations of a body, whereby it is examined how the action of forces deforms the body such that at least in one surface area of the body it is determined whether an equilibrium between internal and external forces exists, that the means of

calculation can check equilibrium conditions, and that the means of calculation does conduct calculations according to claims 1 to 9 in case the state of equilibrium exists.

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